Complete Summary

GUIDELINE TITLE

ACC/AHA guidelines for coronary artery bypass graft surgery: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1991 Guidelines for Coronary Artery Bypass Graft Surgery).

BIBLIOGRAPHIC SOURCE(S)

American College of Cardiology, American Heart Association, Eagle KA, Guyton RA, Davidoff R, Ewy GA, Fonger J, Gott JP, Herrmann HC, Marlow RA, Nugent WC, O'Connor GT, Orszulak TA, Rieselbach RE, Winters WL, Yusuf S, Gibbons RJ, Alpert JS, Eagle KA, Garson A Jr, Gregoratos G, Russell RO, Smith SC Jr. ACC/AHA Guidelines for coronary artery bypass graft surgery. J Am Coll Cardiol 1999 Oct;34(4):1262-347. [753 references]

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SCOPE

DISEASE/CONDITION(S)

Cardiology

GUIDELINE CATEGORY

Evaluation
Treatment

CLINICAL SPECIALTY

Cardiology
Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To assist physicians in clinical decision making by presenting recommendations regarding the appropriate use of coronary artery bypass graft (CABG) surgery.

TARGET POPULATION

Adults with coronary artery disease.

INTERVENTIONS AND PRACTICES CONSIDERED

Coronary artery bypass graft (CABG) surgery

MAJOR OUTCOMES CONSIDERED

- Relief of symptoms of angina
- Long-term survival after bypass surgery (total mortality at 5 and 10 years)

Coronary artery bypass graft (CABG) vs. medical therapy:

- Extension of survival after 10 years follow-up

CABG vs. percutaneous transluminal coronary angioplasty (PTCA):

- Acute outcomes: Death, Q-wave myocardial infarction, percent of patients requiring CABG after PTCA and before hospital discharge
- Late outcomes: Death, Q-wave myocardial infarction, angina, repeated revascularization

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The Committee reviewed pertinent publications, including abstracts, through a computerized search of the English literature since 1989 and performed a manual search of final articles. Special attention was devoted to identification of randomized trials published since the original document (1991).

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Evidence tables were developed and extensively reviewed by an expert in meta-analysis. Inaccuracies or inconsistencies present in the original publication were identified and corrected when possible.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Experts in the subject under consideration are selected from the American College of Cardiology and the American Heart Association to examine subject-specific data and write guidelines. The process includes additional representatives from other medical specialty groups when appropriate. Writing groups are specifically charged to perform a formal literature review, weigh the strength of evidence for or against a particular treatment or procedure, and include estimates of expected health outcomes where data exist. Patient-specific modifiers, comorbidities, and issues of patient preference that might influence the choice of particular tests or therapies are considered as well as frequency of follow-up and cost-effectiveness.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective.

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/or efficacy of a procedure.

Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy.

Class IIb: Usefulness/efficacy is less well established by evidence/opinion.

Class III: Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful.

COST ANALYSIS

Cardiac Rehabilitation

In addition to benefiting a sense of well-being, there is an economic benefit that accrues from participation in cardiac rehabilitation programs. During a 3-year follow-up (mean of 21 months) after coronary events (58% of events were coronary bypass operations), per capita hospitalization charges were $739 lower for rehabilitated patients compared with nonparticipants ($1197 $\pm$ 3911 versus $1936 $\pm$ 5459, P = 0.022).

Coronary Artery Bypass Graft (CABG)

Cost-Effectiveness of CABG

CABG represents a major investment for society, with an initial hospital cost of ~$30,000 applied to >300,000 patients annually in the United States alone ('10 billion dollars). It is most appropriate to consider the cost of CABG surgery compared with other medical treatment modalities with regard to cost-effectiveness. Definitive data for such a comparison are sparse, and multiple assumptions must be made. The most reasonable system of analysis appears to be an estimation of the dollars spent per quality-adjusted life-year gained ($/QALY). In general, a cost-effectiveness of $20,000 to $40,000/QALY is consistent with other medical programs funded by society, such as hemodialysis and treatment of hypertension. A cost of <$20,000/QALY would be considered particularly costeffective, while a cost >$60,000/QALY would be considered expensive.

A widely quoted analysis of the cost-effectiveness of CABG surgery was compiled by Weinstein and Stason in 1982 utilizing data gathered from the then available randomized trials comparing medical therapy with coronary artery bypass. The cost of coronary bypass is relatively constant, whether it is conducted for left main disease or for single-vessel disease. Cost-effectiveness is excellent when the procedure is applied to patient subgroups for whom the benefit in terms of survival or relief of symptoms compared with medical therapy is great (as it would be, for example, in a patient with severe angina and triple-vessel disease). The cost-effectiveness of CABG becomes inordinately poor, however, when the benefit in terms of survival is marginal and there are few symptoms in the preoperative patient. These conclusions are depicted in Figure 12 in the original guideline document, and examples are presented in Table 17 in the original guideline document. Cost-effectiveness for coronary bypass in patients with left main disease is exceptionally good at $9,000/QALY. It is similarly quite attractive in patients with 3-vessel disease, at $18,000/QALY. If one considers the cost-effectiveness of coronary bypass in 2-vessel disease, Weinstein and Stason found that the presence or absence of left anterior descending (LAD) disease was very important. Because CABG surgery is particularly effective in relieving angina, its cost-effectiveness, even in patients with single-vessel disease, is not prohibitive if

that patient has severe angina. In the patient without angina or with only mild angina, however, the cost of coronary bypass per QALY was prohibitive in this analysis, exceeding $100,000 for patients with 2-vessel or 1-vessel disease.

It is not surprising that coronary bypass surgery is cost-effective in exactly those groups of patients in whom survival and/or symptomatic benefit is demonstrable. Most important, within these subsets the cost-effectiveness of coronary bypass compares favorably with other generally accepted medical therapies.

Cost Comparison With Angioplasty

The cost-effectiveness of angioplasty is dependent on the preangioplasty symptoms of the patient in the same way that CABG surgery is so dependent, particularly in subgroups in whom revascularization cannot be shown to have a survival benefit compared with medical therapy (ie, in single-vessel disease). Because it relieves angina, angioplasty for single-vessel-disease patients with severe angina is estimated to have a cost-effectiveness of $9,000/QALY. In patients with only mild angina, however, angioplasty in the setting of LAD single-vessel disease is estimated to have a poor cost-effectiveness of $92,000/QALY.

A direct comparison of the cost of angioplasty and coronary bypass surgery for selected patients with multivessel disease (ie, those patients for whom either therapeutic modality was considered appropriate) has been made in the randomized trials of angioplasty versus CABG.

In general, the cost analyses of randomized trials have revealed that the initial cost of angioplasty is ~50% to 65% of the initial cost of bypass surgery. The incremental cost of repeated procedures during the follow-up period has led to a cumulative cost of angioplasty that approaches the cumulative cost of bypass surgery at 3 years. The Emory Angioplasty versus Surgery Trial (EAST) found that the 3-year inpatient cost of angioplasty was 94% of that of bypass surgery. The Randomized Intervention Treatment of Angina (RITA) Trial, which included a large number of patients with single-vessel disease, found that the 2-year cumulative cost of angioplasty was 80% of the cost of coronary bypass. The Bypass Angioplasty Revascularization Investigation (BARI) trial conducted a prospectively designed analysis of the comparative cost of the 2 procedures from a subgroup of the participating centers, comprising a total of 934 of the 1829 patients enrolled. The mean initial hospital cost of angioplasty was 65% of that of surgery, but after 5 years the cumulative cost of initial surgical therapy was only $2,700 more than the cost of initial angioplasty (an ~5% difference). Because the surgical cohort had a higher overall 5-year survival, the cost of this survival benefit could be calculated. It was found to be $26,000/y of survival benefit for surgical therapy of 2-and 3-vessel disease (in patients for whom either angioplasty or surgery was considered appropriate initial therapy). As considered in the previous section, this incremental cost for double- and triple-vessel disease is within the range of costs for generally accepted therapies. It is notable that this cost of incremental benefit does not consider the benefit of coronary bypass in terms of relief of angina during the follow-up interval, which was demonstrated in each of these 3 trials (Bypass Angioplasty Revascularization Investigation, Emory Angioplasty versus Surgery Trial, and Randomized Intervention Treatment of Angina). If this factor were included, the cost-effectiveness of CABG for incremental benefit in these selected patients with multivessel disease ($/QALY) would be <$26,000.

Previous considerations of both patient benefit and cost-effectiveness have suggested that angioplasty is less effective for patients with more advanced disease. Data gathered at Duke University has shown that there is a significant cost gradient for angioplasty as the extent of disease increases (related to repeated procedures whose instance may be reduced by stents), which is not apparent for coronary bypass.

Cost Reduction in Coronary Bypass

Estimates presented in the previous portion of this section suggest that coronary bypass has been cost-effective in the last 2 decades. Initiatives to decrease the length of stay by using clinical pathways and standardized fast-track protocols have reduced hospital costs. Indeed, the estimates made by Weinstein and Stason are distinctly dated: improvements in outcomes and shortened lengths of hospitalization are likely to have considerably improved the costeffectiveness of CABG (and angioplasty) since 1982.

A major innovation has been the introduction of offbypass CABG, which has reduced the postprocedure length of stay to between 2 and 3 days. In some centers, this has led to a total 3-month cost for single-vessel coronary bypass that is not significantly different from the total 3-month cost for angioplasty of single-vessel disease. Considering the favorable long-term patency of an internal mammary artery (IMA) graft to the LAD, the cost reductions possible with off-bypass CABG may improve the relative cost-effectiveness of coronary bypass compared with either medical therapy or percutaneous techniques, particularly for symptomatic, proximal LAD disease.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The document was reviewed by three outside observers nominated by the American College of Cardiology (ACC) and three outside reviewers nominated by the American Heart Association (AHA), as well as outside reviewers nominated by the American Academy of Family Physicians, the American College of Physicians-American Society of Internal Medicine, Society for Thoracic Surgery (STS), the American College of Surgery, and the Society of Cardiovascular Anesthesiologists. The guideline was approved by the ACC Board of Trustees in March 1999 and by the AHA Science Advisory and Coordinating Committee in June 1999.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Please note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

The American College of Cardiology (ACC)/American Heart Association (AHA) classifications I, II, and III are used to summarize indications as follows:

Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective.

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/or efficacy of a procedure.

Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy.

Class IIb: Usefulness/efficacy is less well established by evidence/opinion.

Class III: Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful.

Indications

A. Indications for coronary artery bypass graft (CABG) in Asymptomatic or Mild Angina

Class I

1. Significant left main coronary artery stenosis.
2. Left main equivalent: significant (>70%) stenosis of proximal left anterior descending (LAD) and proximal left circumflex artery.
3. Three-vessel disease. (Survival benefit is greater in patients with abnormal left ventricular (LV) function; eg, with an ejection fraction [EF] <0.50.)

Class IIa

4. Proximal LAD stenosis with 1- or 2-vessel disease. [1]

Class IIb

5. One- or 2-vessel disease not involving the proximal LAD. [2]

Class III

See text.

B. Indications for CABG in Stable Angina

Class I

1. Significant left main coronary artery stenosis.
2. Left main equivalent: significant (>70%) stenosis of proximal LAD and proximal left circumflex artery.
3. Three-vessel disease. (Survival benefit is greater when LVEF is <0.50.)

4. Two-vessel disease with significant proximal LAD stenosis and either EF <0.50 or demonstrable ischemia on noninvasive testing.
5. One- or 2-vessel coronary artery disease without significant proximal LAD stenosis, but with a large area of viable myocardium and high-risk criteria on noninvasive testing.
6. Disabling angina despite maximal medical therapy, when surgery can be performed with acceptable risk. If angina is not typical, objective evidence of ischemia should be obtained.

Class IIa

7. Proximal LAD stenosis with 1-vessel disease. [1]
8. One- or 2-vessel coronary artery disease without significant proximal LAD stenosis, but with a moderate area of viable myocardium and demonstrable ischemia on noninvasive testing.

Class III

9. One- or 2-vessel disease not involving significant proximal LAD stenosis, in patients who have mild symptoms that are unlikely due to myocardial ischemia or have not received an adequate trial of medical therapy and (A) have only a small area of viable myocardium or (B) have no demonstrable ischemia on noninvasive testing.
10. Borderline coronary stenoses (50% to 60% diameter in locations other than the left main coronary artery) and no demonstrable ischemia on noninvasive testing.
11. Insignificant (<50% diameter) coronary stenosis.

C. Indications for CABG in Unstable Angina/Non-Q Wave myocardial infarction (MI)

Class I

1. Significant left main coronary artery stenosis.
2. Left main equivalent: significant (>70%) stenosis of proximal LAD and proximal left circumflex artery.
3. Ongoing ischemia not responsive to maximal nonsurgical therapy.

Class IIa

4. Proximal LAD stenosis with 1- or 2-vessel disease. [1]

Class IIb

5. One- or 2-vessel disease not involving the proximal LAD. [2]

Class III

See text.

D. Indications for CABG in ST-Segment Elevation (Q-Wave) MI

Class I

None.

Class IIa

1. Ongoing ischemia/infarction not responsive to maximal nonsurgical therapy.

Class IIb

2. Progressive LV pump failure with coronary stenosis compromising viable myocardium outside the initial infarct area.
3. Primary reperfusion in the early hours (<6 to 12 hours) of an evolving ST-segment elevation MI.

Class III

4. Primary reperfusion late (>12 hours) in evolving ST-segment elevation MI without ongoing ischemia.

E. Indications for CABG in Poor LV Function

Class I

1. Significant left main coronary artery stenosis.
2. Left main equivalent: significant (>70%) stenosis of proximal LAD and proximal left circumflex artery.
3. Proximal LAD stenosis with 2- or 3-vessel disease.

Class IIa

4. Poor LV function with significant viable, noncontracting, revascularizable myocardium without any of the aforementioned anatomic patterns.

Class III

5. Poor LV function without evidence of intermittent ischemia and without evidence of significant revascularizable, viable myocardium.

F. Indications for CABG in Life-Threatening Ventricular Arrhythmias

Class I

1. Left main coronary artery stenosis.
2. Three-vessel coronary disease.

Class IIa

3. Bypassable 1- or 2-vessel disease causing life-threatening ventricular arrhythmias[3]

4. Proximal LAD disease with 1- or 2-vessel disease.[3]

Class III

5. Ventricular tachycardia with scar and no evidence of ischemia.

G. Indications for CABG After Failed Percutaneous Transluminal Coronary Angioplasty (PTCA)

Class I

1. Ongoing ischemia or threatened occlusion with significant myocardium at risk.
2. Hemodynamic compromise.

Class IIa

3. Foreign body in crucial anatomic position.
4. Hemodynamic compromise in patients with impairment of coagulation system and without previous sternotomy.

Class IIb

5. Hemodynamic compromise in patients with impairment of coagulation system and with previous sternotomy.

Class III

6. Absence of ischemia.
7. Inability to revascularize owing to target anatomy or no-reflow state.

H. Indications for CABG in Patients With Previous CABG

Class I

1. Disabling angina despite maximal noninvasive therapy. (If angina is not typical, then objective evidence of ischemia should be obtained.)

Class IIa

2. Bypassable distal vessel(s) with a large area of threatened myocardium on noninvasive studies.

Class IIb

3. Ischemia in the non-LAD distribution with a patent internal mammary graft to the LAD supplying functioning myocardium and without an aggressive attempt at medical management and/or percutaneous revascularization.

Class III

See text in guideline document.

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[1] Becomes Class I if extensive ischemia documented by noninvasive study and/or an LVEF <0.50.

[2] If a large area of viable myocardium and high-risk criteria on noninvasive testing, becomes Class I.

[3] Becomes Class I if arrhythmia is resuscitated sudden cardiac death or sustained ventricular tachycardia.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Recommendations provided in the document are based primarily on published data. Because recent randomized trials are unavailable in many facets of coronary artery disease (CAD) treatment, observational trials and, in some areas expert opinion, form the basis for recommendations that are offered. In each "Indications" section in the guideline document, the relative levels of evidence favoring the Class I, II and III indications were discussed, and are highlighted below:

Indications for coronary artery bypass graft surgery (CABG) in Asymptomatic or Mild Angina:

Indications were based on three randomized controlled trials, several smaller randomized trials, a subsequent meta-analysis of these data, and several observational studies. The limitations of these data are discussed in greater detail in the guideline document.

Indications for CABG in Stable Angina:

The indications were based on three large, prospective, randomized trials comparing medical with surgical therapy and multiple observational studies.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

The coronary artery bypass graft (CABG) operation is indicated both for the relief of symptoms and for the prolongation of life.

Comparison of Medical Therapy Versus Surgical Revascularization:

There were three major, randomized trials and several smaller ones. A collaborative meta-analysis of 7 trials with a total enrollment of 2649 patients has allowed comparison of outcomes at 5 and 10 years. Among all patients,the extension survival of CABG surgical patients compared with medically treated patients was 4.3 months at 10 years of follow-up. The benefit of CABG compared with medical therapy in various clinical subsets is presented below.

1. Left Main Coronary Artery Disease

   The trials defined significant left main coronary artery stenosis as a >50% reduction in lumen diameter. Median survival for surgically treated patients was 13.3 years versus 6.6 years in medically treated patients. Left main equivalent disease (70% stenosis in both the proximal left anterior descending [LAD] and proximal left circumflex arteries) appeared to behave similarly to true left main coronary artery disease. Median survival for surgical patients was 13.1 years versus 6.2 years for medically assigned patients. The benefit of surgery for left main coronary artery disease patients continued well beyond 10 years. By 15 years, it was estimated that two thirds of patients originally assigned to medical therapy and who survived would have had surgery. The 15-year cumulative survival for left main coronary artery disease patients having CABG surgery was 44% versus 31% for medical patients.

2. Three-Vessel Disease

   If one defines 3-vessel disease as stenosis of 50% or more in all 3 major coronary territories, the overall extension of survival was 7 months in CABG patients compared with medically treated patients. Patients with class III or IV angina, those with more proximal and severe LAD stenosis, those with worse left ventricular (LV) function, and/or those with more positive stress tests derived more benefit from surgery.

3. Proximal LAD Disease

   In patients with severe, proximal LAD stenosis, the relative risk reduction due to bypass surgery compared with medical therapy was 42% at 5 years and 22% at 10 years. This was even more striking in patients with depressed LV function.

4. LV Function

   In patients with mildly to moderately depressed LV function, the poorer the LV function, the greater was the potential advantage of CABG surgery. Although the relative benefit was similar, the absolute benefit was greater because of the high-risk profile of these patients.

5. Symptoms and Quality of Life

Improvement in symptoms and quality of life after bypass surgery parallels the outcome data regarding survival. Beyond survival, bypass surgery may be indicated to alleviate symptoms of angina above and beyond medical therapy or to reduce the incidence of nonfatal complications like myocardial infarction (MI), congestive heart failure, and hospitalization. Registry studies have shown a reduction in late MI among highest-risk patients, such as those with 3-vessel disease, and/or those with severe angina. In pooled analyses, a benefit on the incidence of MI was not evident. This result likely reflected an early increase in MI perioperatively after CABG, which was balanced by fewer MIs over the long term among CABG recipients. Antianginal medications were required less frequently after bypass surgery. At 5 years, two thirds of bypass patients were symptom-free compared with 38% of medically assigned patients. By 10 years, however, these differences were no longer significant. This result is related to the attrition of vein grafts in the bypass group as well as crossover of medically assigned patients to bypass surgery.

Subgroups Most Likely to Benefit:

The randomized trials of coronary artery bypass graft (CABG) versus medical therapy have defined patient subsets whose survival is enhanced. These patients tend to be those with advanced coronary disease: notably left main disease and triple-vessel disease (or double-vessel disease including a proximal left anterior descending [LAD] stenosis) combined with left ventricular (LV) dysfunction.

POTENTIAL HARMS

Morbidity Associated With Bypass Surgery

1. Neurological Events

   Neurological impairment after bypass surgery may be attributable to hypoxia, emboli, hemorrhage, and/or metabolic abnormalities. Postoperative neurological deficits have been divided into 2 types: type 1, associated with major, focal neurological deficits, stupor, or coma; and type 2, in which deterioration in intellectual function is evident. Adverse cerebral outcomes are observed in approximately 6% of patients after bypass surgery and are equally divided between type 1 and type 2 deficits.

2. Mediastinitis

   Deep sternal wound infection occurs in 1% to 4% of patients after bypass surgery and carries a mortality of approximately 25%.

3. Renal Dysfunction

   Postoperative renal dysfunction occurs in as many as 8% of patients. Among patients who develop postoperative renal dysfunction (defined as a postoperative serum creatinine level >2.0 mg/dL or an increase in baseline creatinine level of >0.7 mg/dL), 18% require dialysis. Overall mortality among patients who develop postoperative renal dysfunction is 19% and approaches two thirds among patients requiring dialysis.

Subgroups Most Likely to be Harmed:

1. Neurological Events: Predictors of cerebral complications after bypass surgery include advanced age and a history of hypertension. Particular predictors of type 1 deficits include proximal aortic atherosclerosis as defined by the surgeon at operation, history of prior neurological disease, use of the intra-aortic balloon pump, diabetes, hypertension, unstable angina, and increased age. Predictors of type 2 deficits include a history of excess alcohol consumption; dysrhythmias, including atrial fibrillation; hypertension; prior bypass surgery; peripheral vascular disease; and congestive heart failure. Estimation of a patient's risk for postoperative stroke can be calculated from Table 1 in the guideline document.
2. Mediastinitis: Predictors of this complication include obesity, reoperation, use of both internal mammary arteries at surgery, duration and complexity of surgery, and diabetes. An individual patient's risk of postoperative mediastinitis can be estimated from Table 1 in the guideline document.
3. Renal Dysfunction: Predictors of renal dysfunction include advanced age, a history of moderate or severe congestive heart failure, prior bypass surgery, type 1 diabetes, and prior renal disease. Table 2 in the guideline document can be used to estimate the risk for an individual patient. Patients with advanced preoperative renal dysfunction who undergo coronary artery bypass graft (CABG) surgery have an extraordinarily high rate of requiring postoperative dialysis. Among patients with a preoperative creatinine level >2.5 mg/dL, 40% to 50% require hemodialysis.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These guidelines attempt to define practices that meet the needs of most patients in most circumstances. The ultimate judgment regarding care of a particular patient must be made by the physician and patient in light of circumstances specific to that patient.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American College of Cardiology, American Heart Association, Eagle KA, Guyton RA, Davidoff R, Ewy GA, Fonger J, Gott JP, Herrmann HC, Marlow RA, Nugent WC, O'Connor GT, Orszulak TA, Rieselbach RE, Winters WL, Yusuf S, Gibbons RJ, Alpert JS, Eagle KA, Garson A Jr, Gregoratos G, Russell RO, Smith SC Jr. ACC/AHA Guidelines for coronary artery bypass graft surgery. J Am Coll Cardiol 1999 Oct;34(4):1262-347. [753 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Oct

GUIDELINE DEVELOPER(S)

American College of Cardiology Foundation - Medical Specialty Society
American Heart Association - Professional Association

SOURCE(S) OF FUNDING

The American College of Cardiology Foundation (ACCF) and the American Heart Association (AHA). No outside funding accepted.

GUIDELINE COMMITTEE

American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1991 Guidelines for Coronary Artery Bypass Graft Surgery)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

The Committee consists of acknowledged experts in cardiac surgery, interventional cardiology, general cardiology, internal medicine, and family practice. The Committee included representatives from the American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP), as well as the Society for Thoracic Surgery (STS). Both academic and private practice sectors were represented.

Committee Members: Kim A. Eagle, MD, FACC (Co-Chair); Robert A. Guyton, MD, FACC (Co-Chair); Ravin Davidoff, MB, BCh, FACC; Gordon A. Ewy, MD, FACC; James Fonger, MD; Timothy J. Gardner, MD, FACC; John Parker Gott, MD, FACC; Howard C. Herrmann, MD, FACC; Robert A. Marlow, MD, MA, FAAFP; William C. Nugent, MD; Gerald T. O'Connor PhD, DSc; Thomas A. Orszulak, MD; Richard E.

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The American College of Cardiology/American Heart Association (ACC/AHA) Task Force on Practice Guidelines makes every effort to avoid any actual or potential conflicts of interest that might arise as a result of an outside relationship or personal interest of a member of the writing panel. Specifically, all members of the writing panel are asked to provide disclosure statements of all such relationships that might be perceived as real or potential conflicts of interest. These statements are reviewed by the parent task force, reported orally to all members of the writing panel at the first meeting, and updated yearly and as change occur.

GUIDELINE STATUS

Please note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

GUIDELINE AVAILABILITY

Electronic copies of the updated guideline: Available from the American College of Cardiology (ACC) Web site.

Print copies: Available from ACC, Resource Center, 9111 Old Georgetown Rd, Bethesda, MD 20814-1699; (800) 253-4636 (US only). Also available from the American Heart Association (AHA), Public Information, 7272 Greenville Ave, Dallas TX 75231-4596; Reprint No. 71-0174.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Eagle KA, Guyton RA, et al. ACC/AHA guidelines for coronary artery bypass graft surgery: executive summary and recommendations : A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to revise the 1991 guidelines for coronary artery bypass graft surgery). Circulation 1999 Sep 28;100(13):1464-80.

Electronic copies: Available from the American College of Cardiology (ACC) Web site in HTML and Portable Document Format (PDF) formats. Also available from the American Heart Association (AHA) Web site in HTML format.

Also available:

- ACC/AHA pocket guidelines for coronary artery bypass graft surgery.

Electronic copies available from the ACC Web site: a Pocket Guideline; or Pocket Guideline Palm Download are available.

Print copies: Available from ACC, Resource Center, 9111 Old Georgetown Rd, Bethesda, MD 20814-1699; (800) 253-4636 (US only). Also available from AHA, Public Information, 7272 Greenville Ave, Dallas TX 75231-4596.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on December 29, 1999. The information was verified by the guideline developer on April 17, 2000.

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